European Monitoring Centre
for Drugs and Drug Addiction

INSIGHTS

MONITORING DRUG USE IN THE DIGITAL AGE: STUDIES IN WEB SURVEYS

Results and challenges of running the European Web Survey on Drugs in Luxembourg: a major contribution to understanding the drug situation

Nadine Berndt and Rita Seixas

Luxembourg Reitox Focal Point, Department of Epidemiology and Statistics, Directorate of Health, Ministry of Health, Luxembourg

Abstract: This paper shows how the second wave of the European Web Survey on Drugs (EWSD) led to a better understanding of the drug situation in Luxembourg. Until the EWSD, detailed information on the drug situation in Luxembourg was very limited, with only a few surveys, often small-scale, having been conducted in the country since the late 1990s. As shown in the paper, the EWSD was able to provide new and complementary information that allowed for deeper insights into patterns of drug use in the country, for example by comparing the survey results with those of the 2014 general population survey. The paper also offers reflections on the methodological challenges and lessons learned in conducting the survey. Among these are the role played by social media platforms in recruiting participants, the use of paid and unpaid advertisements, and importance of linking with national partners to implement the survey. The paper concludes with a discussion of the challenges faced with implementing a targeted web survey in general and in Luxembourg specifically, such as the importance of including languages spoken by large minority groups to gain better survey coverage.

Introduction

Until recently, detailed information on the drug situation in Luxembourg has been lacking. Some information on the prevalence of drug use was provided by a general population survey (GPS) conducted in 2014, and several smaller-scale studies on substance use have shed further light on the situation. However, much of the information only provides a limited window on drug-taking behaviours. In 2018, the second wave of the European Web Survey on Drugs (EWSD) was conducted in Luxembourg to collect up-to-date information on the drug situation in the country, and to better understand patterns of substance use among people who use drugs. This paper shows the contribution the EWSD has made to the understanding of substance use in Luxembourg, complementing existing studies and providing details on previously unknown aspects of the drug situation.

The paper begins with an overview of existing studies in this area, particularly the 2014 GPS, known as the European Health Interview Survey (EHIS). Subsequently, the added value of conducting additional targeted surveys is explored, followed by a descrption of the methodology and recruitment methods used for the EWSD in Luxembourg. Details are provided on the sample of respondents and the broader lessons learned from conducting the survey in a small country. To show the contribution made by the EWSD to the understanding of the drug situation in Luxembourg, the results from the survey are compared with those of the EHIS. The study concludes with a discussion of the patterns of substance use identified in the

EWSD and reflections on the methodological challenges and lessons learned from running the survey.

Drug use surveys: a gap in the Luxembourg data collection system

Detailed information on drug use among the general population in Luxembourg has been very limited, with only a few, often small-scale surveys conducted in the country since the late 1990s. In 1998, a study conducted in seven council districts of the Grand-Duchy of Luxembourg invited eligible citizens aged between 12 and 60 years to complete an anonymous self-administered questionnaire on illicit drug use (Fischer and Krieger, 1999). Two subsequent studies with a focus on cannabis were conducted in 1999, the main results of which have been published elsewhere (Fischer, 2000; Fischer and Krieger, 1999).

In 2014, the first large-scale general population survey (GPS) on health determinants and health behaviour was conducted in Luxembourg, known as the European Health Interview Survey (EHIS). The EHIS is a cross-sectional GPS, whose methodology was developed by the then 28 Member States of the European Union, based upon a health data questionnaire. The sample was representative at the national level and obtained by random stratified sampling (by age, gender and district of residence). Eligible respondents were residents in Luxembourg aged 15 years and older. While the methods have been described in detail elsewhere (Eurostat, 2019), the use of illicit drugs and new psychoactive substances (NPS) is not mandatorily assessed by the EHIS, but was included in the Luxembourg survey, based on EMCDDA and national information requirements (Berndt et al., 2018). Although the EHIS provides valuable information on drug use in the general population, only a small number of drug-related questions were asked. As such, detailed information on substance use patterns and related behaviours has remained limited.

Since 2014, drug use among a particular target group, namely partygoers, is assessed is assessed annually at the national level. Drug use among this group is measured by a targeted survey run by the PIPAPO project (4motion NGO), a programme aiming to raise awareness of the risks and potential harms related to drug use. PIPAPO conducts a rapid assessment of drug use among a self-selected sample of visitors of cultural, music and festival events. The objective is to study the types of drugs used by visitors of these events, including non-residents of Luxembourg, and the visitors' demographic characteristics. The self-administered 1-page paper-pencil questionnaire is available in German and French and completed anonymously. It contains six questions, including one on drug use in the previous two weeks. In 2018, the PIPAPO team was present at 27 events and music festivals, and collected 2 079 valid questionnaires, of which two thirds were completed by residents of the Grand-Duchy of Luxembourg. According to the respondents of the PIPAPO survey, the illicit drugs most commonly consumed in the past two weeks were cannabis, followed by cocaine, MDMA/ecstasy and amphetamines (Paulos et al., 2018). Since the survey only assesses drug use among a highly selective group of partygoers with a single question, limited insight is provided into Luxembourg's illicit drug market and overall user patterns and habits. Therefore, beyond the information on drug use collected in the EHIS, there is a clear gap in detailed studies on drug use in Luxembourg.

European Web Survey on Drugs: an opportunity to complement GPS data on drug use

The EHIS includes a range of mandatory health topics and, as mentioned earlier, just a few questions to determine drug use in the general population. To avoid the risk of survey fatigue linked to the length of the questionnaire, it has not been feasible to include more drug-related questions (Berndt et al., 2018). Meanwhile, web surveys have shown great promise as an adjunct to GPS, with the possibility of contributing to existing gaps in knowledge regarding patterns of substance use (EMCDDA, 2019). Some research has also been conducted on the potential generalisability of web survey results (see Caulkins et al., 2022; Spilka et al., 2022).

To address the information needs on substance use in Luxembourg, the EWSD was conducted by aiming to develop a better understanding of drug use patterns and to learn more about the national drug market. In addition, the EWSD assessed attitudes and risk perception associated with drug use and purchasing habits to gain better insight into these matters. The EWSD presented an opportunity to assess these issues rapidly and at a relatively low cost.

Methods

Adaptation and promotion of the EWSD within Luxembourg

Luxembourg has three official languages: Luxembourgish, French and German. As such, several considerations were made to avoid biasing the sample based on language skills. In addition, approximately half of the population of Luxembourg are of foreign background or foreign nationals (STATEC, 2018). To ensure the comprehensibility of the EWSD for the majority of Luxembourg residents, it was made available in three

languages, namely English, French and German. Luxembourg conducted the EWSD by using the 'Limesurvey' platform, as originally developed by the EMCDDA, and some questions were adapted to match Luxembourg's particular context.

The Ministry and Directorate of Health supported the Luxembourg Reitox focal point ([1]) throughout the different stages of the project, such as the development of the communication strategy. The Ministry of Health supported the launch of the project and embraced the EWSD as a valuable tool to gain better insight into drug use patterns and the drug market at the national level. Broad communication, visibility and presence in the media were therefore considered to be important.

Recruitment strategies: the importance of linking with national partners working in the field

The poster and leaflet that were used to promote the survey were developed by the Reitox focal point and the Pipapo project (4motion NGO), who have field experience with harm reduction approaches to drug use in recreational settings. The image used (Figure1) was intended to be both appealing and neutral in order not to induce or communicate any attitude towards drug use. Both posters and flyers contained brief information about the study, including its purpose and a matrix barcode (QR code), which could be scanned using a mobile phone to direct people to the survey.

Following EMCDDA recommendations, the EWSD was widely promoted by means of social media, particularly Facebook, and several other online sources, with the support of an external communication agency. The main promotional activities consisted of creating a separate Facebook page and ads for the EWSD Luxembourg. The ads used a combination of slogans and images, which changed in response to the recruitment flow. The Facebook ads targeted adults who were 18 years and older, who had indicated a working knowledge of English, French or German, and who were residents of the Grand-Duchy of Luxembourg. Individuals who clicked on these ads were automatically redirected to the Facebook page of the EWSD, which contained a description of the project and a link to the survey. Similarly, campaigns were also implemented in Google Display and on YouTube. Google Display and Facebook ads were used for a period of 4 weeks, whereas the survey was online for a total duration of 2 months. Additionally, the Ministry of Health published an official press release informing the public about the launch of the survey.

FIGURE 1

Promotional poster of the European Web Survey on Drugs (EWSD) in Luxembourg

Collaborations established with several institutions directly or indirectly linked to the target group of people who use drugs were also important. Among the RELIS ([2]) network institutions, organisations working in drug prevention (CNAPA) ([3]) and drug counselling therapy to youth (Fondation Solina, IMPULS service) collaborated on the promotion of the survey. Besides adding a banner on their website (directing individuals to the survey), they promoted the survey in direct contacts with their clients. Partnerships were established with other institutions as well, including cultural and nightlife institutions, schools

([1]) The national focal points are the cornerstone of the Reitox network (the European information network on drugs and drug addiction). Members of the Reitox network are designated national institutions or agencies responsible for data collection and reporting on drugs and drug addiction. These institutions are called 'national focal points' or 'national drug observatories'. On an annual basis, a national focal point collects information and produces comparable and scientifically sound data on a national drug situation which feeds into the EMCDDA's monitoring of the drug situation across Europe. For more information, visit: https://www.emcdda.europa.eu/about/partners/reitox_en.

([2]) Réseau d'Information Luxembourgeois sur les Stupéfiants et des Toxicomanies (RELIS). The RELIS network is a multisectoral network that includes national outpatient treatment and harm reduction centres, residential specialised treatment centres, hospitals, the national addictions prevention organisation as well as judicial and penal authorities.

([3]) Centre National de Prévention des Addictions (CNAPA, previously named CePT) was created in 1995 with the mission of addiction prevention and health promotion, namely the development and promotion of ideas and strategies for a healthy and positive lifestyle.

with a majority of young adults (aged 18 years old and above), youth centres, scouts, libraries, social residences for at-risk adolescents, and the University of Luxembourg, all of which promoted the survey by displaying posters and distributing flyers. Lastly, staff from the focal point accompanied the Pipapo project at events in Luxembourg in order to distribute flyers and promote the survey face-to-face.

In summary, while the recruitment strategy was mainly based on online promotion, it was complemented by more traditional recruitment strategies (posters and flyers distribution). Ultimately, the majority of the participants who responded to the survey accessed it through social media, notably Facebook ads (80.0 %) and to a lesser extent Instagram (11.1 %). Access to the survey through QR codes, which were made available with flyers or posters distributed around the capital and at specific events, was less frequent (at 5.1 %).

Study participants

Participants were recruited between 1 August and 3 October 2018. In total, 3 943 people responded to the survey. After screening for survey eligibility, 2 720 participants were excluded from the data analysis because they were younger than 18 years, had not used illicit drugs during the last year or indicated their primary residency to be outside of the Grand-Duchy of Luxembourg. The final sample comprised 1 223 participants. Table 1 outlines their socio-demographic characteristics. The sample comprised 69.1 % males, 30.1 % females and 0.8 % transgender, aged between 18 and 67 years (mean = 24.41, SD = 8.21). Respondents were mainly young adults — 88.2 % aged between 18 and 34 years. Approximately half of the participants were employed (53.5 %), followed by a large number of students (40.5 %). The majority had a secondary (50.1 %) or university (25.2 %) diploma. The largest group of respondents (42.6 %) reported receiving an income of not more than EUR 1 499 per month, defined as the minimum income level.

TABLE 1

Sample characteristics of Luxembourg EWSD respondents (*N* = 1 223)

Characteristics of sample	Cases (%)
Gender (1 222 valid responses)	
Male	844 (69.1 %)
Female	368 (30.1 %)
Transgender	10 (0.8 %)
Age (1 190 valid responses)	
18–24	801 (67.3 %)
25–34	258 (20.8 %)
35–44	98 (8.2 %)
45 and above	43 (3.6 %)
Employment status (819 valid responses)	
Employed	438 (53.5 %)
Students	332 (40.5 %)
Unemployed	34 (4.2 %)
Other	15 (1.8 %)
Education (860 valid responses)	
Primary education	78 (9.1 %)
Secondary diploma	431 (50.1 %)
University diploma	217 (25.2 %)
Post-graduate diploma	134 (15.6 %)
Monthly income level (852 valid responses)	
Minimum level (up to €1 499)	363 (42.6 %)
Low level (€1 500–2 499)	168 (19.7 %)
Low-medium level (€2 500–3 499)	128 (15.0 %)
High-medium level (€3 500–4 499)	88 (10.3 %)
High level (€4 500–5 999)	42 (4.9 %)
Maximum level (€6 000 and above)	63 (7.4 %)

Results: the EWSD's contribution to understanding drug use in Luxembourg

Comparing Luxembourg's GPS (2014) and EWSD (2018) results

Data collected through the Luxembourg GPS, conducted in 2014 (EHIS), provided information on lifetime, last year and last month prevalence of use of several substances ([4]), as well as age at first use. The EWSD complemented the EHIS by including more types of drugs used (distinguishing between herbal and resin cannabis and adding synthetic cathinones, synthetic cannabinoids and opioids, among others, to the survey modules) and collecting more detailed data on drug use and issues previously unassessed by the EHIS. Newly assessed topics included attitudes towards permitting cannabis use, perception of risks linked with the use of drugs, purchasing behaviours including quantities used and bought (in a typical day, per year), how the drugs were obtained, money spent (per purchase and in the last month), prices per gram or unit, and intended effects and reasons for the use of new psychoactive substances (NPS).

([4]) Cannabis, ecstasy, cocaine, heroin, LSD, hallucinogenic mushrooms, amphetamines, solvents/glue and new psychoactive substances (NPS).

TABLE 2

Lifetime, last year and last month prevalence rates of drug use among EWSD respondents and the general population

Drug	Prevalence of drug use among EWSD (2018) respondents aged 18–34 years				Prevalence of drug use among the general population (EHIS 2014) aged 15–34 years			
	LTP (%)	LYP (%)	LMP (%)	*N*	LTP (%)	LYP (%)	LMP (%)	*N*
Cannabis, general	99.2	96.9	82.7	1048	31.5	9.8	4.2	1148
Amphetamines	27.2	16.8	8.7	1048	1	0.1	0	1148
Methamphetamines	8.6	5.1	2.5	1045	–	–	–	–
MDMA/ectasy	35.6	22.4	10.3	1048	2.2	0.4	0.3	1148
Cocaine	31.4	21.3	13.2	1047	2.1	0.7	0.3	1148
Any NPS					0.7	0.3	0.1	1148
Synthetic cathinones	2.4	1.7	1.2	1033	–	–	–	–
Synthetic cannabinoids	16.6	12.0	8.9	1036	–	–	–	–
Synthetic opioids	3.5	2.8	1.7	1033	–	–	–	–
Other NPS	7.1	5.3	3	1030	–	–	–	–
Crack	4.5	2.8	1.9	1035	–	–	–	–
Heroin	3.7	2.7	2.1	1035	0.3	0.1	0	1148
Alcohol	96.6	94.4	87	1043	–	–	–	
GHB	3.3	2.4	1.8	1031	–	–	–	–
Ketamine	10.9	7.8	3.6	1034	–	–	–	–
LSD	18	10.0	4.1	1031	0.9	0.2	0	1148
Other hallucinogens	29.7	17.8	8.4	1031	2.3	0.2	0	1148

Abbreviations: LTP, Lifetime prevalence; LYP, last year prevalence; LMP, last month prevalence; *N*, number of valid responses.
Source: EWS-D (2018) and EHIS (2014).

In the EWSD sample, the most commonly used drugs in the last year were cannabis (95.7 %), cocaine (22.5 %) and MDMA/ecstasy (21.1 %), followed by other hallucinogens (17.4 %) and amphetamines (15.9 %). In terms of last month use, cannabis (81.1 %), cocaine (13.9 %) and MDMA/ecstasy (10 %) were the drugs with the highest prevalence, followed by synthetic cannabinoids (8.7 %). The majority of the EWSD participants reported having used only one type of drug in the last year (56.3 %), while 20.8 % reported the use of two drugs, 9.5 % the use of three drugs and 7 % the use of four drugs. The proportion of respondents who declared using more than four substances over the past 12 months steadily decreased to only 0.6% who declared having used 10 different substances.

Table 2 illustrates differences in the three prevalence indicators (lifetime, last year and last month use) for the drugs assessed in the EWSD and the EHIS. Since the age characteristics of the two samples are unequally distributed (88.2 % of the EWSD respondents were aged between 18 and 34 years), the samples were restricted so that comparisons could be made for respondents from a similar age group (15 to 34 years for EHIS and 18 to 34 years for the EWSD) ([5]).

Across both studies, cannabis was the most commonly used substance. Cocaine and MDMA/ecstasy followed cannabis, although some differences exist between the two studies. Among EWSD respondents, cocaine was higher than MDMA/ecstasy with regard to use in the last month, while MDMA/ecstasy was more common considering last year and lifetime use. In the general population, cocaine and MDMA/ecstasy were equally prevalent in terms of last year use, while cocaine was more common for last month use. In terms of lifetime use, hallucinogens (e.g. hallucinogenic mushrooms) were cited as the second most prevalent drug. Looking at the results of the EWSD, NPS were used by a non-negligible proportion of respondents aged between 18 and 34 years, with 21.7 % of these respondents having used an NPS in their lifetime, 16.2 % during the last year and 11 % during the last month. Moreover, data revealed a particularly particularly high prevalence of use of synthetic cannabinoids among this group of young users — with 16.6 % reporting having ever tried such substances and 12.0% and 8.9 % having used them during the last year and last month respectively.

([5]) The EHIS data was already summarised for this age group (15–34 years), and the data were not available for disaggregation to provide an exact match with the EWSD's age range.

TABLE 3

Pearson correlations between last month prevalence of use of individual substances

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Cannabis	–															
2. Synthetic cannabinoids	.103**	–														
3. Cocaine	.000	−0.010	–													
4. Crack	.008	.108**	.288**	–												
5. MDMA	.077**	.048	.402**	.134**	–											
6. LSD	.015	.100**	.258**	.261**	.370**	–										
7. Other hallucinogens	.062*	.121**	.139**	.132**	.303**	.389**	–									
8. Amphetamines	.015	.079**	.386**	.151**	.396**	.303**	.236**	–								
9. Methamphetamine	.007	.087**	.248**	.326**	.308**	.242**	.192**	.404**	–							
10. Heroin	−.021	.048	.268**	.532**	.112**	.247**	.131**	.110**	.263**	–						
11. Synthetic opioids	−.017	.209**	.150**	.259**	.197**	.358**	.306**	.239**	.319**	.190**	–					
12. Synthetic cathinones	−.003	.233**	.195**	.376**	.266**	.280**	.221**	.293**	.394**	.275**	.500**	–				
13. GHB	−.022	.132**	.220**	.197**	.201**	.250**	.199**	.218**	.210	.171**	.314**	.381**	–			
14. Ketamine	.003	.135**	.307**	.202**	.326**	.419**	.299**	.452**	.232	.174**	.459**	.427**	.394**	–		
15. Any NPS	.067*	.877**	.034	.120**	.104**	.165**	.162**	.162**	.153**	.084**	.381**	.323**	.199**	.229**	–	
16. Other NPS	.000	.188**	.176**	.241**	.262**	.405**	.343**	.253**	.351**	.210**	.530**	.407**	.322**	.424	.293**	–
17. Alcohol	−.008	−.038	.057*	.003	.025	.020	−.014	.011	.013	.011	−.048	.000	−.002	.011	.022	.019

* $p < .05$; ** $p < .01$

New information obtained by the EWSD

Understanding the links between the use of different drugs

In order to gain a better understanding of current use of different drug types, the links between last month use of all drugs were explored through Pearson correlations. Table 3 presents the correlations (*r*) ([6]) between last month use of the different drugs assessed, as last month use may be more meaningful than lifetime and last year use in terms of understanding drug preferences of current users.

First, the analysis indicates that use of cannabis (herbal or resin) is independent from the use of any other substance, except synthetic cannabinoids, to which cannabis use presents a weak positive correlation ($r = .103$, $p < .01$). Correlations between cannabis use and MDMA/ecstasy use ($r = .077$, $p < .01$) , other hallucinogens ($r = ..062$, $p < ..05$) and any NPS use ($r = ..067$, $p < ..05$) are statistically significant but small enough that their significance can arguably be due to the large sample size. Second, use of alcohol was found to have no significant association with use of any other drug. The only exception observed concerns cocaine, but the correlation is very small ($r = .057$, $p < .05$) and its significance may result from the large size of the sample.

Unlike cannabis and alcohol, the majority of all other substances have weak ($.1 < r < .3$) to moderate ($.3 < r < .5$) correlations among each other. Cocaine use has moderate associations with MDMA/ecstasy ($r = .40$, $p < .01$), amphetamines ($r = .39$, $p < .01$) and ketamine use ($r = .31$, $p < .01$), whereas MDMA/ecstasy use reveals moderate associations with amphetamines ($r = .40$, $p < .01$) and LSD use ($r = .37$, $p < .01$). Heroin and crack use are highly correlated with each other ($r = .53$, $p < .01$), and crack use also correlates moderately with the use of synthetic cathinones ($r = .38$, $p < .01$). Use of synthetic opioids is highly linked with the use of other NPS ($r = .53$, $p < .01$) and synthetic cathinones ($r = .50$, $p < .01$).

Attitudes towards permitting cannabis use

Unlike the EHIS, the EWSD also inquired about attitudes towards permitting cannabis use. More specifically, respondents were asked to indicate on a scale ranging from 1 ('fully agree') to 5 ('fully disagree') to what extent they agreed with the following statement: 'people should be permitted to take cannabis (hashish or marijuana/weed)'. Overall, a large majority of the respondents reported they 'fully agree' (72.6 %) or 'largely agree' (19.7 %) with this statement, compared with a small proportion of respondents who largely (2.0 %) or fully (0.5 %) disagreed with it. Approximately 5 % of the sample reported not having a clear position on the matter (Table 4). The generally positive attitude towards permitting cannabis use is not surprising considering the characteristics of the sample, in particular the high prevalence of cannabis use among this group.

TABLE 4

Distribution of EWSD respondents according to their attitudes towards cannabis use

Attitudes towards 'people should be permitted to take cannabis (hashish or marijuana/weed)'	*N*	%
Fully agree	888	72.6
Largely agree	241	19.7
Neither agree or disagree	63	5.2
Largely disagree	25	2.0
Fully disagree	6	0.5
Total	1 223	100

Risk perception associated with cannabis, alcohol and cocaine use

The EWSD further complements GPS data in the assessment of the perceptions of risks related to substance use behaviours. The participants were presented with statements and asked to judge the general risk linked to each behaviour on a 4-point rating scale, ranging from 'no risk' to 'great risk'. Statements included 'trying cocaine or crack once or twice', 'smoke marijuana or hashish regularly' and 'having five or more drinks each weekend'.

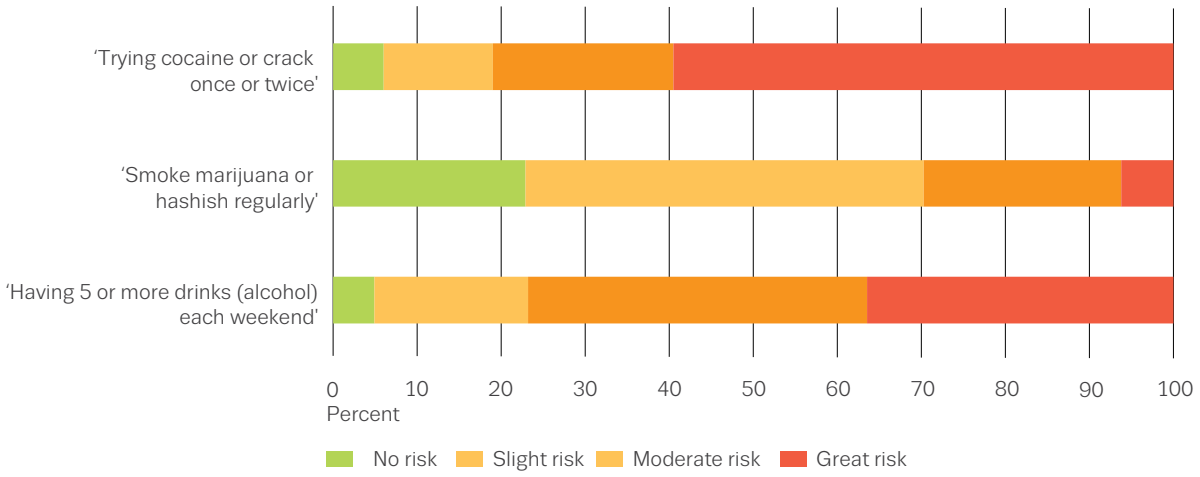
Smoking marijuana or hashish on a regular basis was perceived as involving the lowest risk (Figure 2). Specifically, 22.9 % considered that this behaviour has 'no risk' and 47.4 % that it has a 'slight risk'. In contrast, 59.5 % perceived a 'great risk' and 21.5 % a 'moderate risk' in 'trying cocaine or crack once or twice', and 40.4 % perceived a 'moderate' and 36.5 % a 'great risk' in 'having 5 or more drinks each weekend'. In summary, far more respondents consider regular use of cannabis as a no-risk or low-risk behavior compared with those who attribute a moderate or great risk to it. In contrast, 'having 5 or more drinks each weekend' or 'try cocaine or crack once or twice' are seen as great or moderate risk behaviors by the majority of the respondents.

Whether these risk perceptions differ between frequent and infrequent users was further explored for both cannabis and cocaine use. Results reveal differences between respondents

([6]) The value of '*r*' is a representation of how closely two variables relate to one another and it ranges between −1 and +1, with $r < 0$ indicating a negative relationship and $r > 0$ a positive relationship. In general, a value $.1 < |r| < .3$ is considered a weak relationship, $.3 < |r| < .5$ a moderate relationship and $.5 < |r|$ a strong relationship.

FIGURE 2

Risk perception associated to the use of cocaine, cannabis and alcohol



reporting frequent and infrequent cannabis use. As Figure 3 shows, the proportion of infrequent cannabis users considering regular cannabis use as a moderate or a great risk behaviour was greater (12.0 % consider it a great risk and 43.3 % a moderate risk) than the proportion of frequent users (4.1 % consider it a great risk and 21.3 % a moderate risk). With regard to cocaine, the risk perception of 'trying cocaine or crack once or twice' did not differ across frequent and infrequent cocaine/crack users (Figure 4).

Additional data related to consumption habits

The EWSD also included questions regarding consumption habits, such as frequency of use, amount used on a typical day, sources of acquisition, average amount bought in a typical purchase, money spent during the past month, and the prices per unit or gram. Moreover, the proportion of drugs typically given, sold or shared with others was assessed. Table 5 summarises some of these results. From the entire list of variables, only those with at least 20 valid responses are presented here.

FIGURE 3

Risk perception of regular cannabis use among frequent and infrequent cannabis users

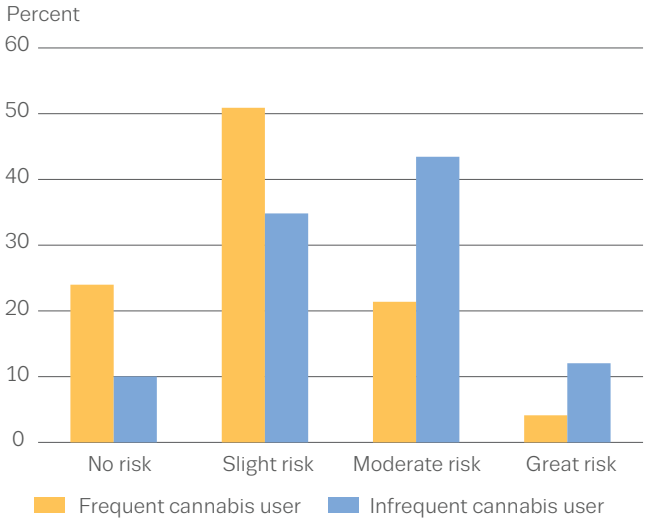


FIGURE 4

Risk perception of experimental cocaine or crack use among frequent and infrequent cocaine users

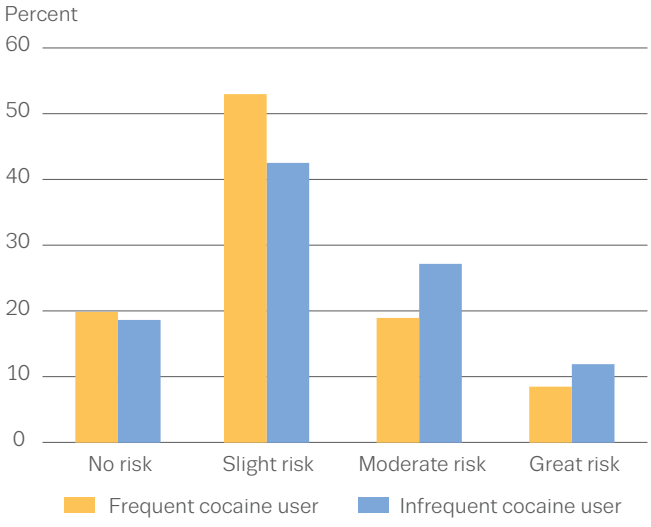


TABLE 5

Summary of additional data obtained through the EWSD

	Cannabis resin	Herbal cannabis	Cocaine powder	Amphetamine	MDMA	NPS herbal
Average days of use – last month	12.30 (SD = 10.89, *N* = 361)	16.11 (SD = 11.03, *N* = 738)	5.17 (SD = 7.83, *N* = 163)	5.96 (SD = 7.55, *N* = 49)	3.63 (SD = 5.41, *N* = 71)	13.55 (SD = 12.15, *N* = 22)
Average amount used – typical day	2.85 joints (SD = 2.29, *N* = 349)	2.44 joints (SD = 1.92, *N* = 778)	1.18 grams (SD = 1.25, *N* = 145)	0.8 grams (SD = .98, *N* = 80)	0.51 grams (SD = .46, *N* = 129)	1.75 grams (SD = 1.42, *N* = 20)
Source of drugs	Dealer = 74.2 % For free = 43.6 % (*N* = 383)	Dealer = 62.3 % For free = 47.1 % (*N* = 869)	Dealer = 48.7 % For free = 42.9 % (*N* = 156)	Dealer = 38.9 % For free = 54.4 % (*N* = 90)	Dealer = 42.2 % For free = 46.9 % (*N* = 147)	From a friend (given or bought) = 40.9 % Dealer = 40.9 % (*N* = 22)
Average amount bought – typical purchase	4.06 grams (SD = 2.22, *N* = 288)	4.56 grams (SD = 2.12, *N* = 562)	2.45 grams (SD = 3.63, *N* = 104)	8.17 grams (SD = 21.23, *N* = 42)	4.61 tablets (SD = 9.02, *N* = 38)	16.69 grams (SD = 42.70, *N* = 21)
Average money spent (EUR) – in the last month	117.33 (SD = 193.11, *N* = 196)	152.08 (SD = 173.02, *N* = 425)	380.89 (SD = 549.42, *N* = 62)	109.64 (SD = 227.72, *N* = 28)	43.03 (SD = 214.03, *N* = 88)	164.44 (SD = 133.43; *N* = 9) (1)
Average price (EUR) per unit/ gram	14.51/gram (SD = 10.11, *N* = 228)	16.68/gram (SD = 11.10, *N* = 497)	64.90/gram (SD = 28.35, *N* = 100)	13.71/gram (SD = 21.99; *N* = 30)	8.72/tablet (SD = 3.37, *N* = 35)	10.77/gram (SD = 6.40, *N* = 19) (1)
Percentage of drug typically:						
Given	5.65 % (SD = 9.65, N = 214)	4.87 % (SD = 11.73, *N* = 401)	7.73 % (SD = 14.75, *N* = 66)	9.62 % (SD = 15.89, *N* = 42)	12.79 % (SD = 19.99, *N* = 53)	–
Sold	4.32 % (SD = 13.14, *N* = 202)	3.59 % (SD = 12.79, *N* = 382)	8.97 % (SD = 25.35, *N* = 63)	9.29 % (SD = 24.16, *N* = 38)	9.0 % (SD = 24.02, *N* = 45)	–
Shared	49.31 % (SD = 32.55, *N* = 255)	43.71 % (SD = 33.69, *N* = 483)	46.39 % (SD = 32.30, *N* = 94)	44.80 % (SD = 31.55, *N* = 50)	47.79 % (SD = 33.80, *N* = 83)	–

Notes. The 'average days of use – last month' were rounded to the closest unit (no decimal cases).
For 'amount bought – typical purchase', the amounts used on a typical day were rounded to the unit for cannabis resin and herbal cannabis.
(1) Despite the very small subsample of respondents, this item was retained since it provides meaningful and previously unknown information.

Results show that, on average, among those reporting smoking cannabis, herbal cannabis was smoked on 16 days per month (2.4 joints/day on average) and resin around 12.3 days per month (2.9 joints/day on average). Very few respondents reported use of herbal NPS, but those who did used these substances on 13.6 days per month on average. Cocaine, amphetamines and MDMA/ecstasy were reported to be used less frequently, varying between 3.6 and 6 days per month among those who used these substances.

Table 5 summarises the data on typical drug purchases, as reported by the respondents. For cannabis resin, a typical purchase was, on average, 4.1 grams; for herbal cannabis, 4.6 grams; for cocaine, 2.5 grams; for amphetamines, 8.2 grams; for MDMA/ecstasy, 4.6 tablets; for herbal NPS, 16.7 grams. Average estimated cocaine prices were EUR 65/ gram and MDMA/ecstasy prices were EUR 9/tablet. Cannabis prices varied from EUR 14.5/gram (resin) to EUR 17/gram (herbal). On average, the amounts survey respondents reported spending for specific drugs ranged from EUR 43 for MDMA/ecstasy to EUR 381 per month for cocaine powder. Respondents reported that, besides small percentages that were sold (between 3.6 % and 9.3 % depending on the drug) or given away (between 4.9 % and 12.8 %), a considerable proportion of the drugs they bought was shared with others. Overall, between 44 % and 49 % of the drugs bought were reported to be shared — such as around 49 % of cannabis resin and 48 % of MDMA/ecstasy.

Discussion: added value of the EWSD

The EWSD is the first large-scale survey in Luxembourg targeting people who use drugs, and the results from the survey have contributed significantly to the understanding of illicit drug use in the country. The insights gained into patterns of use, the illicit market in Luxembourg, and the attitudes to and risk perception associated with drug use, represent a clear added value of this survey, even in the context that any analysis has to recognise that the data are non-representative.

Conducting a targeted web-based survey in a small country enables researchers to access groups of people using drugs who are usually difficult to reach and who are often too few within a GPS to allow in-depth insights into patterns of use and supply. Our study confirms that, compared with the other strategies used, Facebook ads were the most effective recruitment tool. Implementing these ads was less time-consuming and required less effort compared with other strategies. Moreover, the web survey assessed more substances and topics than the nationally conducted GPS on health determinants and health behaviour (EHIS 2014), resulting in a detailed data set on substance use behaviours among people who use drugs in Luxembourg. While not being representative of the entire population, the EWSD allowed us to obtain a larger and more detailed set of data on the topic of interest in comparison to the EHIS.

Although there are methodological limitations of web surveys (see, for example, Rhodes et al., 2003; Thornton et al., 2016; van Gelder et al., 2010, and also Belackova and Drapalova, 2022), our study reveals that the EWSD was particularly suitable for reaching young adults and illustrates the potential of social media strategies to facilitate the recruitment of hard to reach groups compared with other traditional respondent recruitment techniques (e.g. Kayrouz et al., 2016; Whitaker et al., 2017). The popularity of the topic of the EWSD, within a context of increasing digitalisation and discussions about the legalisation of cannabis for non-medical purposes at the national level at the time the survey was conducted (Gouvernement Luxembourg, 2018; Kurschat, 2019; Welsch and Besch, 2019), may also have contributed to a higher response compared with previously conducted targeted surveys. Overall, the implementation of the EWSD in Luxembourg supports the idea that web-based surveys could be considered a complementary tool in the range of methods for drug data collection, as previously outlined by van Gelder and colleagues (2010).

Other advantages of the EWSD were the rapid data collection phase and the low cost of conducting the survey. Recruiting respondents via social media allowed control over the advertising duration and the targeting of the recruitment (i.e. regarding where and to whom the ads were shown), while the Limesurvey platform enabled us to verify the number of respondents that had accessed the survey from social media advertising.

Challenges of running a targeted web survey

It should be noted that there are limitations associated with the use of web-based surveys in general, and in Luxembourg in particular, that warrant caution when interpreting the results of the EWSD. First, due to limited control over the access to the survey's platform, there is a general risk that large numbers of non-eligible respondents access the survey (e.g. Couper, 2011; Fan and Yan, 2010; van Gelder et al., 2010). The EWSD was no exception, with a very large number of non-eligible respondents — i.e. aged less than 18 years, with no illicit drug use in the last year or non-resident in Luxembourg. Although the EWSD's use of advertisement on Facebook and other social media offered a promising approach to recruit people who use drugs, it was not possible to limit access to the survey to only those who were eligible for inclusion. Respondents were those individuals who were made aware of the existence of the survey, had internet access, visited the website and decided to participate in the survey. Although the target audience was people who use drugs with residency in Luxembourg, more than two thirds (69 %) of those who accessed the link to the web survey were non-eligible respondents. Among the excluded respondents, the majority reported unknown or foreign residency (79 %). It is important to note that Luxembourg has a large population of cross-border workers without primary residency in Luxembourg. Additionally, Luxembourg hosts a large range of social events that are attended by German, Belgian and French residents (e.g. Paulos et al., 2018).

Second, while the vast majority of Luxembourg residents are German, French or English speakers, it is likely that some residents were excluded from the survey due to having limited literacy skills, or because they did not speak any of the three languages in which the survey was administered. By January 2018, the proportion of Luxembourg nationals in the total population was 52.1 %, while the proportion of foreigners was 47.9 %, with more than 170 nationalities represented in the total population. Response bias might have been decreased by translating the survey further into other common national languages, such as Portuguese and Italian. However, this was not feasible during the study period due to resource constraints.

Finally, we obtained a self-selected sample that was ultimately highly skewed to a younger demographic, which is a common characteristic when using social media recruitment strategies (Andreassen et al., 2007; Bethlehem, 2010; Thornton et al., 2016), especially when targeting people who use drugs.

Moreover, specific groups may have been under-represented in our web survey for other reasons, such as limited internet access. This may have introduced biases, reducing the reliability of the estimates (e.g. Frandsen et al., 2016; van Gelder et al., 2010), although the extent of this is unknown. Furthermore, the EWSD was restricted to residents above the age of 18, thus excluding younger groups of people that may engage in illicit drug use and thus potentially missing additional relevant information on patterns of substance use among young people.

Conclusion

The study has highlighted the potential of the European Web Survey on Drugs (EWSD) to complement data collected from general population surveys (GPS) to gain deeper insights into patterns of drug use. While the sample for the EWSD in Luxembourg is likely not representative of the entire population, its findings have helped to improve the understanding of substance use patterns and sources of drug supply in the country.

As our experience of conducting the EWSD in Luxembourg shows, social media platforms were highly effective in recruiting a large number of participants — as reflected in our final sample size. We limited our paid social media advertising to Facebook, Google Display and YouTube. Future studies could consider using unpaid advertising methods on Facebook as well as other platforms and see how these might perform in recruiting respondents. Moreover, future research may also consider applying random probability sampling and weighting adjustment procedures to improve the accuracy of the survey estimates and reduce bias introduced by non-observation (Bethlehem, 2010).

In conclusion, the findings of the EWSD in Luxembourg and its results presented here add to existing research highlighting the value of web surveys for recruiting people who use drugs who may otherwise be difficult to reach or who may be under-represented in GPS.

Acknowledgements

The authors wish to thank Carlos Paulos and Adriana Martins de Pinho (PIPAPO, 4motion) and the Department of Preventive Medicine (Directorate of Health, Ministry of Health) for their collaboration and their commitment. Moreover, the authors wish to thank all partners of the RELIS (Réseau d'Information Luxembourgeois sur les Stupéfiants et des Toxicomanies) for their support to the study. The authors would also like to give a particular thanks to all respondents for their participation in this study.

References

Andreassen, H. K., Bujnowska-Fedak, M., Chronaki, C., Dumitru, R. C., Pudule, I., Santana, S., Voss, H. and Wynn, R. (2007), 'European citizens' use of e-health services: a study of seven countries', *BMC Public Health* 7(1), doi:10.1186/1471-2458-7-53.

Belackova, V. and Drapalova, E. (2022), 'Web surveys as a method for collecting information on patterns of drug use and supply', *Monitoring drug use in the digital age: studies in web surveys*, EMCDDA Insights (https://www.emcdda.europa.eu/publications/insights/web-surveys/web-surveys-method-collecting-information-patterns-drug-use-supply_en).

Berndt, N., Origer, A. and Seixas, R. (2018), *National Drug Report 2018 – Grand Duchy of Luxembourg. New developments, trends and in-depth information on selected issues*, Point Focal Luxembourgeois de l'OEDT, Direction de la Santé, Luxembourg.

Bethlehem, J. (2010), 'Selection bias in web surveys', *International Statistical Review* 78(2), pp. 161–188.

Caulkins, J. P., Furlong, K., McComas, B., Domingues, M. N., Siddique, A. and Kilmer, B. (2022), 'Comparing two approaches for estimating cannabis consumption: raking and regression', *Monitoring drug use in the digital age: studiesn web surveys*, EMCDDA Insights (https://www.emcdda.europa.eu/publications/insights/web-surveys/comparing-approaches-estimating-cannabis-consumption-raking-regression_en).

Couper, M. P. (2011), 'The future modes of data collection', *Public Opinion Quarterly* 75(5), pp. 889–908.

European Monitoring Centre for Drugs and Drug Addictions (2019), *European Web Survey on Drugs: patterns of use*, http://www.emcdda.europa.eu/activities/european-web-survey-on-drugs_en#section1.

Eurostat (2019), *European Health Interview Survey (EHIS)*, Luxembourg (https://ec.europa.eu/eurostat/web/microdata/european-health-interview-survey).

Fan, W. and Yan, Z. (2010), 'Factors affecting response rates of the web survey: a systematic review', *Computers in Human Behavior* 26, pp. 132–139.

Fischer, U. C. (2000), *Cannabis in Luxemburg – Eine Analyse der aktuellen Situation*, Centre de Prevention des Toxicomanies (CePT), Luxembourg.

Fischer, U. C. and Krieger, W. (1999), 'Suchtpräventioun an der Gemeng – Entwicklung', in: *Durchführung und Evaluation eines Modells zur gemeindeorientierten Suchtprävention*, Centre de Prevention des Toxicomanies (CePT), Luxembourg.

Frandsen, M., Thow, M. and Ferguson, S. G. (2016), 'The effectiveness of social media (Facebook) compared with more traditional advertising methods for recruiting eligible participants to health research studies: a randomized, controlled clinical trial', *JMIR Research Protocols* 5(3), p. 161.

Gouvernement Luxembourg (2018), *Accord de coalition 2018-2023* (https://gouvernement.lu/de/publications/accord-coalition/2018-2023.html).

Kayrouz, R., Dear, B. F., Karin, E. and Titov, N. (2016), 'Facebook as an effective recruitment strategy for mental health research of hard to reach populations', *Internet Interventions* 4, pp. 1–10.

Kurschat, I. (2019), 'High time', *Lëtzebuerger Land*, Luxembourg (https://www.land.lu/page/article/010/335010/FRE/index.html).

Paulos, C., Hagen, L. and Loverre, S. (2018), *Enquête PIPAPO 2017. La consommation récréative de drogues au Grand-Duché de Luxembourg*, 4motion a.s.b.l., Luxembourg.

Rhodes, S. D., Bowie, D. A. and Hergenrather, K. C. (2003), 'Collecting behavioral data using the world wide web: considerations for researchers', *Journal of Epidemiology and Community Health* 57, pp. 68–73.

Spilka, S., Legleye, S. and Beck, F. (forthcoming), 'Combining web surveys and general population surveys to improve the knowledge of drug users in France: reflection on the recruitment strategy and the generalisability of results', *Monitoring drug use in the digital age: studies in web surveys*, EMCDDA Insights (https://www.emcdda.europa.eu/publications/insights/web-surveys/Combining-web-surveys-general-population-surveys-knowledge-drug-users-France-reflection-recruitment-strategy-generalisability-results_en).

STATEC (2018), *Luxembourg in Figures – 2018*, Institut national de la statistique et des études économiques du Grand-Duché de Luxembourg, Luxembourg (https://statistiques.public.lu/catalogue-publications/luxembourg-en-chiffres/2018/luxembourg-figures.pdf).

Thornton, L., Batterhamb, P. J., Fassnacht, D. B., Kay-Lambkin, F., Calear, A. L. and Hunt, S. (2016), 'Recruiting for health, medical or psychosocial research using Facebook: systematic review', *Internet Interventions* 4, pp. 72–81.

van Gelder, M. M. H. J., Bretveld, R. W. and Roeleveld, N. (2010), 'Web-based questionnaires: the future in epidemiology?', *American Journal of Epidemiology* 172(11), pp. 1292–1298.

Welsch, A. and Besch, P. (2019), 'Kiffen erlaubt', *Luxemburger Wort*, Luxembourg (https://www.wort.lu/de/politik/kiffen-erlaubt-5c4efc73da2cc1784e33c92c).

Whitaker, C., Stevelink, S. and Fear, N. (2017), 'The use of Facebook in recruiting participants for health research purposes: a systematic review', *Journal of Medical Internet Research* 19(8), doi:10.2196/jmir.7071.

About the EMCDDA

The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) is the central source and confirmed authority on drug-related issues in Europe. For over 25 years, it has been collecting, analysing and disseminating scientifically sound information on drugs and drug addiction and their consequences, providing its audiences with an evidence-based picture of the drug phenomenon at European level. Based in Lisbon, the EMCDDA is one of the decentralised agencies of the European Union.

About this series

EMCDDA Insights are topic-based reports that bring together current research and study findings on a particular issue in the drugs field. This paper is published as part of *Monitoring Drug Use in the Digital Age: Studies in Web Surveys*, an EMCDDA Insights that provides an overview of current knowledge and the latest developments in the field of web surveys on drug topics. The Insights contains in-depth reports on the methodology of web surveys, the available studies being carried out in different drug topics and analyses of the European Web Survey on Drugs. The Insights will be of interest to researchers and scientists, people who use drugs, policymakers and their advisors, specialists and practitioners, and all those concerned with the issue of drugs and innovative methods.

EMCDDA project group: João Matias, Alexander Soderholm, Katerina Skarupova, André Noor and Jane Mounteney

Recommended citation: Berndt, N. and Seixas, R. (2022), 'Results and challenges of running the European Web Survey on Drugs in Luxembourg: a major contribution to understanding the drugs situation', in *Monitoring drug use in the digital age: Studies in web surveys,* EMCDDA Insights (https://www.emcdda.europa.eu/publications/insights/web-surveys/european-web-survey-drugs-small-country-results-challenges_en)

Luxembourg: Publications Office of the European Union, 2022

PDF ISBN 978-92-9497-808-0 ISSN 2314-9264 doi:10.2810/145243 TD-XD-22-011-EN-N

This publication is only available in electronic format.

EMCDDA, Praça Europa 1, Cais do Sodré, 1249-289 Lisbon, Portugal
Tel. (351) 211 21 02 00 | info@emcdda.europa.eu
emcdda.europa.eu | twitter.com/emcdda | facebook.com/emcdda

Publications Office of the European Union